

## ABSTRACT OF THE DISCLOSURE

A method and apparatus for a atomic operation is described. A method comprises receiving a first program unit in a parallel computing environment, the first program unit including a memory update operation to be performed atomically, the memory update operation having an operand, the operand being of a data-type and of a data size, and translating the first program unit into a second program unit, the second program unit to associate the memory update operation with a set of one or more low-level instructions upon determining that the data size of the operand is supported by the set of low-level instructions, the set of low-level instructions to ensure atomicity of the memory update operation.

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